



THE BIG DEAL

- High power handling, 10W
- Full decade bandwidth
- Low mainline loss, 0.8 dB
- High directivity, 20 dB
- Excellent VSWR, 1.20:1

APPLICATIONS

- VHF/UHF
- Signal monitoring
- Communications
- Military mobile

PRODUCT OVERVIEW

Mini-Circuits' SYBDC-6-62HP+ surface mount bi-directional coupler provides high power handling up to 10W and low mainline loss of 0.8 dB typically for applications from 30 to 600 MHz. The coupler features core and wire construction mounted on an 8-lead printed laminate base with wraparound terminations for excellent solderability. The unit measures 0.38 x 0.50 x 0.25", accommodating dense circuit board layouts.



Generic photo used for illustration purposes only

CASE STYLE: AH202-1

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our website for methodologies and qualifications

KEY FEATURES

Feature	Advantages
High power handling, 10W	Usable in many systems with high-power requirements
Low mainline loss, 0.8 dB	Provides excellent through-path signal power transmission.
Good directivity, 20 dB	High directivity allows accurate signal sampling through the coupled port with minimal measurement error.
Excellent VSWR, 1.20:1 (input/output/coupling)	Provides excellent matching in 50Ω systems with minimal signal reflection.
Small size, 0.38 x 0.50 x 0.25"	Provides high power capability while saving space in systems with tight layouts.



SURFACE MOUNT

Bi-Directional Coupler

SYBDC-6-62HP+

50Ω 6 dB Coupling 30 to 600 MHz 10 Watt

ELECTRICAL SPECIFICATIONS AT 25°C¹

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		30		600	MHz
Mainline Loss (above theoretical loss 1.10 dB)	30	—	0.4	0.8	dB
	520	—	0.7	1.0	
	600	—	0.8	1.2	
Coupling	30-600	—	6.7±0.4	—	dB
Coupling Flatness(±)	30-600	—	0.2	0.5	dB
Directivity	30-200	14	16	—	dB
	200-400	15	20	—	
	400-600	16	22	—	
Return Loss (Input)	30	—	16	—	dB
	200	—	19	—	
	600	—	20	—	
Return Loss (Output)	30	—	15	—	dB
	200	—	23	—	
	600	—	22	—	
Return Loss (Coupling)	30	—	15	—	dB
	200	—	18	—	
	600	—	20	—	
Input Power ²	30-600	—	—	10	W

1. Tested on Test Board TB-349

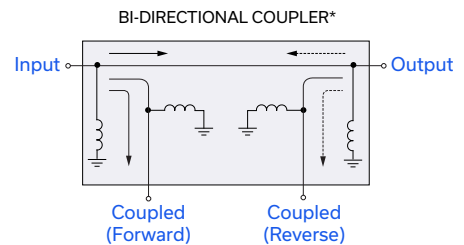
2. The user must provide adequate means of heat removal to limit the temperature of ground connections 2,3,6,7 to 85°C, in order to ensure proper performance.

At 25°C ambient temperature this requires thermal resistance of the user's PC board heat sink to be 27°C/W or less when the unit is driven at maximum specified RF input power, 10W. At higher ambient temperature, with the same heat sink. Input power in watts must not exceed 10W x (85°C-Tambient)-60°C.

MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

ELECTRICAL SCHEMATIC



*Electrical schematic is for Bi-Directional coupler with internal transformer(s) that routes DC from all ports to ground



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SYBDC-6-62HP+

Mini-Circuits

50Ω 6 dB Coupling 30 to 600 MHz 10 Watt

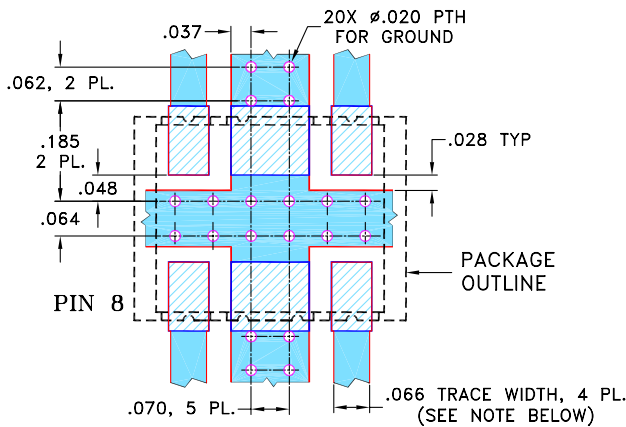
PAD CONNECTIONS

INPUT	8
OUTPUT	1
COUPLED (FORWARD)	5
COUPLED (REVERSE)	4
GROUND	2, 3, 6, 7

***PRODUCT MARKING:** SYBDC-6-62HP

*Marking may contain other features or characters for internal lot control

SUGGESTED PCB LAYOUT (PL-246)

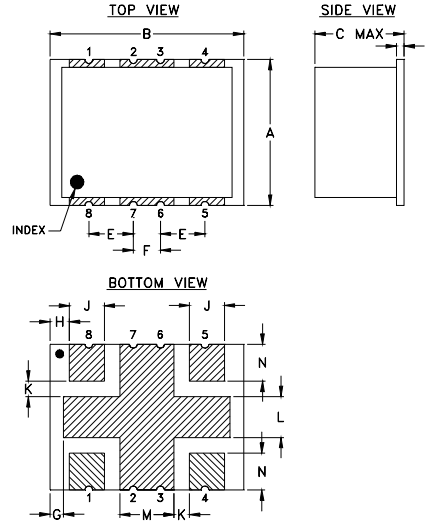


NOTES:

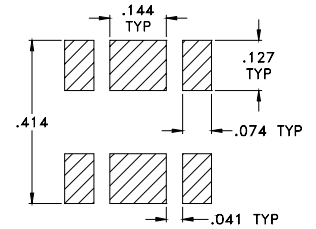
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

OUTLINE DRAWING



PCB Land Pattern



Suggested Layout, Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F	G
.38	.50	.25	.020	.115	.070	.035
9.65	12.70	6.35	0.51	2.92	1.78	0.89
H	J	K	L	M	N	wt
.050	.090	.040	.105	.140	.095	grams
1.27	2.29	1.02	2.67	3.56	2.41	0.80

TAPE & REEL INFORMATION: F61



SURFACE MOUNT

Bi-Directional Coupler

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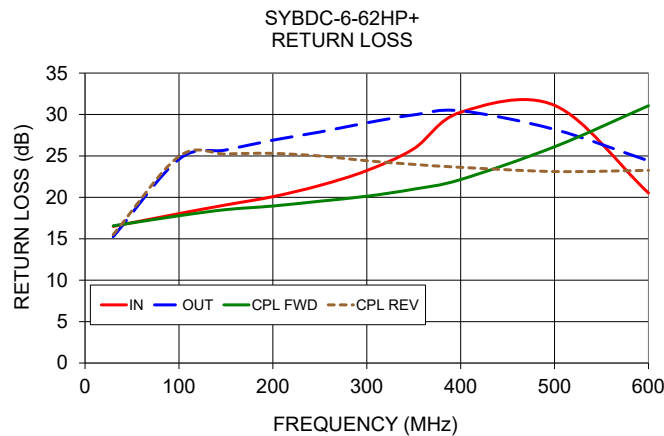
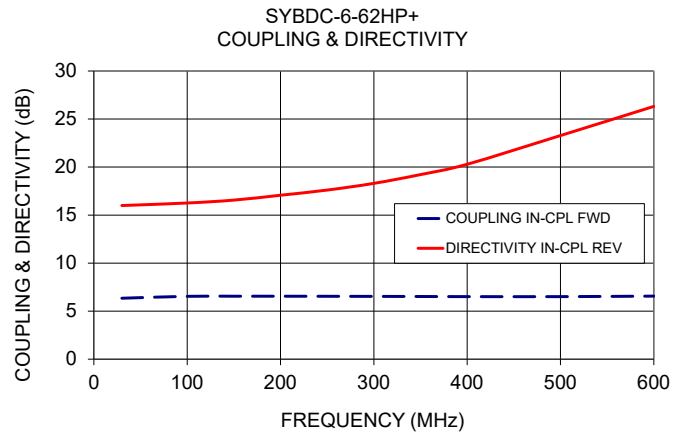
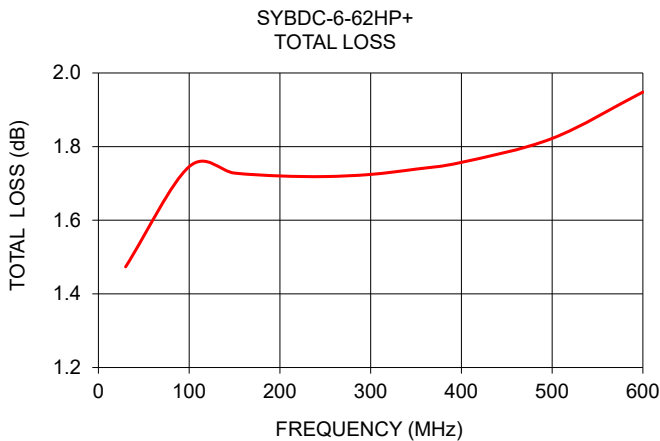
Mini-Circuits

50Ω 6 dB Coupling 30 to 600 MHz 10 Watt

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)		Directivity (dB)		Return Loss (dB)			
	In-Out	In-Cpl Fwd	Out-Cpl Rev	In-Cpl Rev	Out-Cpl Fwd	In	Out	Cpl Fwd	Cpl Rev
30	1.47	6.34	6.58	16.33	15.99	16.49	15.25	16.57	15.51
100	1.75	6.54	6.99	16.74	16.26	18.04	24.60	17.78	24.93
150	1.73	6.55	6.95	17.22	16.56	19.09	25.72	18.52	25.24
200	1.72	6.55	6.90	17.71	17.07	20.08	26.91	18.95	25.31
250	1.72	6.55	6.86	18.47	17.61	21.44	27.89	19.53	24.99
300	1.72	6.54	6.82	19.44	18.30	23.23	29.00	20.14	24.42
350	1.74	6.52	6.78	20.57	19.22	25.86	29.96	20.99	23.98
400	1.76	6.51	6.74	21.79	20.29	30.28	30.45	22.15	23.63
500	1.82	6.51	6.67	22.85	23.28	31.10	28.20	26.11	23.12
600	1.95	6.56	6.58	19.54	26.32	20.53	24.41	31.06	23.26

Total Loss= Mainline Loss + Theoretical Loss 1.10 dB.



- NOTES**
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
 - B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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